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ABSTRACT

A study determined the perceptions of recent completers of California community college vocational programs and their employers regarding the job-related competencies and knowledge of general education the completers should possess in order to succeed and advance in their careers. Completers had received degrees or certificates in either agriculture; business and management; computer and information science; engineering and related studies; health; consumer education and home economics; and public affairs and services. A sample of 2,330 completers and 306 employers were asked to complete survey questionnaires that contained a list of 46 job-related competencies and general education outcomes. They rated each competency's importance to performance in current jobs and to career advancement. Responses from 48 percent of the students and 71 percent of the employers were received. The following are among the results reported: (1) the responses from completers seemed to validate the importance of good work habits, work attitudes, and other positive work behaviors; (2) competencies in the areas of interpersonal skills, communication skills, and problem solving were also considered important; (3) perceptions were very similar, regardless of whether the respondents held degrees or certificates, and there were few differences across program areas; and (4) generally, employers' and completers' responses were similar. (A 10-item bibliography and appendices listing participating colleges, providing the survey forms, and tabulating results are included.) (CML)

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A STUDY OF GENERAL EDUCATION REQUIREMENTS IN VOCATIONAL EDUCATION PROGRAMS

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A STUDY OF GENERAL EDUCATION REQUIREMENTS IN VOCATIONAL EDUCATION PROGRAMS

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Prepared for the
Vocational Education Division
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September 1989

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EXECUTIVE SUMMARY

Purpose of the Study

This study was conducted for the Chancellor's Office of the California community colleges as one of the 1987-88 vocational education special projects supported by Vocational Education Act of 1984 funds. The purpose of the study was to determine the perceptions of recent completers of community college vocational programs and their employers regarding the job-related competencies and knowledge of general education the former students should possess in order to succeed and advance in their careers. The concern was not with basic skills such as reading and math or with job specific skills such as welding and typing, but with job-related competencies and other skills and knowledge that vocational education students should have when they complete their programs in order to succeed on the job.

Methodology

The study focused on two levels of programs (degree versus certificate) and the seven occupational areas that had the largest vocational enrollments in California community colleges. They were: Agriculture, Business and Management, Computer and Information Science, Engineering and Related, Health, Consumer Education and Home Economics, and Public Affairs and Services.

Selection of the Sample

The population from which the study sample of former vocational education students was drawn was those persons who responded to the employment survey of the California community college vocational programs follow-up system in 1985-86, 1986-87, or 1987-88. From each of the 25 participating colleges, up to 15 degree program students and 15 certificate program students were selected for each of the seven occupational areas by a systematic sampling method. This procedure resulted in a total of 2,330 former vocational students selected for the study.

Instrument Development

Since perception data were to be collected from a large number of former vocational education students and their employers, a mail-survey method was used to collect data. It was also determined that the survey form would contain a list of job-related competencies and general education outcomes so that respondents could rate each item on a three-point scale: Extremely Important,

Important, and Not Important. They were to rate each item twice: once for its importance for current job performance, and once for its importance for career advancement.

Project staff developed two survey forms, one for former students and one for their employers. The only significant difference between the two forms was that the student form asked for the name, address, and telephone number of the respondent's employer/supervisor. Each survey form contained 46 items and some space where a respondent could write in items if he or she believed that important competencies were missing from the list.

Student Survey

The student survey was carried out over the three months between March 2, 1989, and May 31, 1989. The following process was followed for the former student survey:

1. The first wave of survey forms was sent using first-class mail with a postage-paid return envelope.
2. One week after the first mailing a reminder postcard was sent to all members of the sample using first-class mail.
3. Two weeks after the reminder mailing a second wave of survey forms was sent to nonrespondents using first-class mail.

Of the 2,330 former students in the study, 509 responded to the first mailing (22%), and an additional 419 responded to the second mailing (18%). If the undeliverables are excluded from computation, the overall response rate was 48%.

Employer Survey

The former students were asked to give their supervisor's name and address on the student survey form if they were willing to let the project staff send a questionnaire to their employer. All supervisors (306) for whom the necessary information was given constituted the employer survey sample.

In the employer survey, the following two steps were taken in addition to the three step process used in the student survey:

- Two weeks after the second mailing a telephone call was made to all nonrespondents asking for their help.
- Immediately after the telephone calls a third wave of survey forms was sent to nonrespondents.

One hundred and four of the 306 targeted employers responded to the first mailing (34%), 63 to the second mailing (21%), and 51 to the third mailing (16%). The overall response rate was 71%.

Data Analyses

The initial analysis for the former student data was a simple tabulation of the responses to the 46 items listed on the survey form. Corresponding percentages were computed for each item for each of the three response categories: Extremely Important, Important, and Not Important.

The second analysis for the former student data was to compute the average rating for each of the 46 items. The highest possible mean rating was 3.0 (when all respondents considered the item Extremely Important), the lowest 1.0 (when all respondents considered the item Not Important). This analysis was conducted to simplify the process of rank ordering the 46 items in terms of their importance as perceived by the respondents. A mean rating of 2.5 was used as a cut-off point for an item perceived by the former students as very important.

Similar data analyses were conducted with the employer data. The results were also compared with those from the former students.

Results

Perceptions of the Former Vocational Education Students

Twenty of the 46 items were considered very important by the former vocational students for their current job performance and for their career advancement. They were:

- Performing tasks accurately
- Dependability
- Positive work attitude
- Attendance and punctuality
- Ability to follow instructions
- Honesty and ethical behavior
- Ability to work independently
- Reading and comprehending job-related material
- Getting along with others
- Accepting responsibility for one's actions
- Self-assurance/self-confidence
- Working cooperatively as a member of a team
- Effectively communicating verbally

- Listening attentively
- Following rules and policies
- Ability to communicate effectively in small groups
- Decision making skills
- Problem solving skills
- Reasoning ability
- Doing more than what is minimally required

In addition, the former students considered "Appropriate dress and grooming" very important for their current job performance, while 10 other items were considered very important for their career advancement. Among those 10 items, "Taking initiative" and "Effectively communicating in writing" were considered most important.

The findings from the former students seem to validate the importance of good work habits, work attitudes, and other positive work behaviors. Also, competencies in the areas of interpersonal skills, communication skills, and problem solving skills were considered very important.

With regard to the perceptions of former vocational education students who were in degree programs and in certificate programs, there was little difference between the two groups as to which items were important to their current job performance. The similarity of the two groups was even more striking for their career advancement.

The perceptions of the seven occupational groups were also in good agreement as to which items are very important for job performance, even though some groups identified unique needs.

Perceptions of the Employers of Former Vocational Students

The supervisors of the former vocational students considered the following 13 items very important for an employee's current job performance as well as for career advancement:

- Dependability
- Attendance and punctuality
- Performing tasks accurately
- Honesty and ethical behavior
- Positive work attitude
- Ability to follow instructions
- Working cooperatively as a member of a team
- Reading and comprehending job-related material

- Getting along with others
- Accepting responsibility for one's actions
- Following rules and policies
- Effectively communicating verbally
- Listening attentively

In addition, 16 items were considered very important by the employers for their employee's career advancement. Two of these items ("Decision making skills" and "Doing more than what is minimally required") were rated particularly high for career advancement (2.7) compared with their ratings for current job performance (2.3).

The results of the analyses of employer data by the occupational area of the former students clearly showed that there were some differences among the groups. However, the results also revealed that there were more similarities than differences in terms of which items are considered very important.

Comparisons of the Perceptions of Former Students and Their Employers

The perceptions of former vocational education students were compared with those of their employers for employee's current job performance. The results indicated that generally the perceptions of the former students and the employers were similar. However, there were four items that the former student group rated much higher than the employer group. They were: "Ability to work independently," "Self-assurance/self-confidence," "Appropriate dress and grooming," and "Knowledge and application of economic principles related to business and personal finances." When an employee's career advancement was considered, there was little difference between former students and employers regarding which items are perceived as very important.

Recommendations

An objective of the study was to make recommendations for curriculum improvement based on the findings. The following recommendations are offered:

1. In the perception of the former vocational education students and their employers, knowledge in general education areas was less important to success on the job work than other job-related competencies. However, this should not be interpreted as an indication that general education subject areas are not important for the total development of vocational students at community colleges.

2. Many of the competencies that were considered very important by both former students and their employers belong to a category of positive work behaviors, such as performing tasks accurately, dependability, and attendance and punctuality. Even though vocational educators generally recognize the importance of these behaviors, they should be reminded of the need for promoting such behaviors in their students.

3. One category of important competencies identified by both students and employers was the ability to work well with others, such as getting along with others and working cooperatively as a team member. Vocational educators need to focus on helping their students acquire these competencies by the use of appropriate instructional methods, such as cooperative learning and small group projects.

4. Another category of important competencies was effective communication. It included ability to follow instructions, reading and comprehending job related materials, and effectively communicating verbally. This is the area where integration and cooperation with the general education program is required most. If desired, specially designed courses can be offered to vocational education students to help them acquire these competencies.

5. The 20 or so competencies that were identified as very important to success in work should be part of the vocational education curriculum at California community colleges. They should be made more specific and explicit, then integrated into the current vocational education curriculum.

6. Even though the results for the seven occupational groups generally agreed as to which competencies were very important to success in work, there were some unique competencies for specific occupational areas. Occupational area advisory committees should select a set of the most essential competencies based on the study findings, design appropriate learning experiences (method and content) for each competency, and disseminate the information to vocational instructors for possible use in their classes.

7. It is recommended that the study findings be disseminated to California community college instructional staff so that they have opportunities to react to and become aware of the importance of the various competencies to their students and employers.

8. Chancellor's Office staff should develop a checklist based on the findings of this study so that curriculum developers or vocational instructors can use it to review their vocational curriculum or courses to see how well they reflect the important competencies.

9. Curriculum developers and vocational instructors who attempt to integrate the important competencies into existing curriculum should pay as much attention to instructional methodology as to content so that the instructional practices optimally promote the development of such competencies in students.

INTRODUCTION

During interviews with business and industry representatives as part of a recent study of public and private sector vocational education training programs in California (Wright & Kim, 1988), company representatives often mentioned the need for community colleges to train students in job-related competencies other than basic academic skills and job skills. For example, it was mentioned that to meet company needs, the secretarial studies curriculum should be modified to include assertiveness training, communication and problem solving skills, human relations skills, and general work readiness training (work habits, etc.). It is also well known that employers want their employees to be able to apply basic communication and mathematical skills in their work as well as interpersonal skills (e.g., Selz, Jones, & Ashley, 1980). Many also want their employees to be both adaptable and flexible to changes in the workplace (Pratzner & Russell, 1984).

Vocational education is one of the primary missions of the California community colleges. Through a variety of offerings including degrees, certificates, and short-term training programs and courses, vocational education in the community colleges is designed to prepare individuals for employment, for advancement in their employment, for adjustment in employment due to changing labor market needs, and for career changes. While programs adequately prepare individuals for required job skills, there is also a need to insure that vocational education includes a variety of educational experiences beyond the job skills required to obtain and maintain employment. However, there has been no study conducted to determine the perceptions of recent completers of California community college vocational education programs or of their employers regarding the job-related competencies and knowledge of general education they should possess in order to succeed and advance in their careers.

Purpose of the Study

The purpose of this study was to determine the perceptions of vocational education program completers and their employers and to prepare recommendations for curriculum improvement that outline the job-related competencies and knowledge of general education that the completers should possess. The concern was not with basic academic skills (e.g., reading and math) or with job-specific skills (e.g., welding or typing), but with the job-related competencies and other skills and knowledge (e.g., ability to adapt or decision

making skills) that vocational education students should have when they complete their programs. Put another way, the concern was to try to determine what employees need beyond basic skills and job-specific skills in order to succeed on the job.

Objectives of the Study

The specific objectives of the study were:

1. To design a study to determine the perceptions of recent completers of community college programs and their employers regarding the job-related competencies and knowledge of general education that the former students should possess in order to succeed and advance in their careers.
2. To collect the perception data from former vocational education students and their employers.
3. To analyze the perception data by program level (degree vs. certificate) and by occupational area (Agriculture, Business, etc.).
4. To compare, where appropriate, the perceptions of former vocational education students and their employers.
5. To prepare recommendations for curriculum improvement based on study findings.

The study was guided by an 11-member advisory committee consisting of employers, college administrators, and faculty members (see list on page ii). The committee reviewed and approved the study design, the survey forms, and data analysis results. It also reviewed a draft of this report.

METHOD

This section addresses the selection of the sample, the development of data collection instruments, data collection activities, and data analyses.

Selection of the Sample

The population from which the study sample of former vocational education students was drawn was those persons who responded to the employment survey of the California community college vocational programs follow-up system in 1985-86, 1986-87, or 1987-88. The participant names and other necessary information (e.g., address, program area) were obtained from the project director of the follow-up study after approval to release the data was obtained from the colleges involved. The same data could have been obtained from the individual colleges but the study cost and burden on the colleges would have been very high if such an approach had been taken. A list of participating colleges is given in Appendix A.

Sample size. The original study plan called for a sample of 3,500 program completers stratified by seven occupational areas and two levels (250 students x 7 areas x 2 levels = 3,500). The program areas were Agriculture, Business and Management, Computer and Information Science, Engineering and Related, Health, Consumer Education and Home Economics, and Public Affairs and Services. The two levels were degree and certificate programs. However, by applying the sampling procedures described below because of time constraints, a total of 2,330 former vocational education students were selected for the study.

Sampling procedures. It took considerably more time than anticipated to obtain copies of data files that contained former student names, addresses, and other identification information. Therefore, it was necessary to start sample selection without knowing the final number of colleges that would participate or the number of their former students for whom data would be available.

As soon as a copy of a data file for a college became available, up to 15 degree program students and 15 certificate program students were selected from each of the seven program areas by a systematic sampling method. Based upon available information, it was assumed that eventually data would be available for about 20 colleges. The maximum sample size was, therefore, estimated at 4,200 (15 students x 2 levels x 7 areas x 20 colleges = 4,200). However, the

resulting sample turned out to be much smaller than anticipated (2,330). The majority of colleges did not offer programs in all of the seven occupational areas and, for the areas offered, many colleges did not have 15 degree program and 15 certificate program students among the statewide follow-up study participants.

Regarding the sample for the employer survey, we believed that sending a questionnaire to an organization employing a former student without specifying the name of his or her supervisor would result not only in a poor return rate but also less valid perceptions of the skills and competencies needed to succeed in the job. Therefore, the former students were asked to give their supervisor's name on the student survey form if they were willing to let us send a questionnaire to their employer. All supervisors (306) for whom the necessary information was available constituted the employer sample.

Instrument Development

Since perception data were to be collected from a large number of former vocational education students and their employers, it was determined that the data would be collected through a mail-survey method. It was also determined that the survey form would contain a list of job-related competencies and general education outcomes so that respondents could rate each item on a three-point scale: Extremely Important, Important, and Not Important. They were to rate each item twice: once for its importance for current job performance, and once for its importance for career advancement.

In order to develop the survey form, project staff compiled a list of job-related competencies and general education outcomes on the basis of a literature review and a review of catalogs for 12 California community colleges. (See the References section for the major documents reviewed.) This list was presented to the study advisory committee. The committee members rated each item on the list in terms of its importance to the study. A total of 68 items were considered important by a majority of committee members. By adding appropriate instructions to the list of items, two survey forms were prepared, one for former vocational education students and one for their employers. The only significant difference between the two forms was that the student form asked for the name, address, and telephone number of the respondent's employer/supervisor.

The draft survey forms were tried out with eight former students and six employers. The instructions and several items were modified on the basis of the tryouts. Ten items were eliminated because at least three respondents did not understand them. The revised survey forms with 58 items were then presented to the study advisory committee for final review.

The committee made modifications to several items and eliminated 17 of the 58 since each item would have to be judged twice, once for current job performance and once for career advancement. However, Chancellor's Office staff later added five items in order to cover general education objectives more adequately. The final survey form, therefore, contained 46 items and some space where a respondent could write in items if he or she believed that important things were missing from the list. The former student survey form and the accompanying cover letter are shown in Appendix B, the employer form and its cover letter in Appendix C.

Data Collection

Data were collected through a former student survey and an employer survey. The survey operations were geared to obtaining the highest possible return rate within the resources available. Necessary procedures were followed to assure confidentiality and anonymity, such as the use of identification numbers instead of names and the creation of separate files for personal information and survey data.

Student survey. The student survey was carried out over the three months between March 2, 1989, and May 31, 1989. The survey had to be conducted several colleges at a time since the necessary identification information was not available for all colleges at the same time.

The following process was followed for the former student survey:

1. The first wave of survey forms was sent using first-class mail with a postage-paid return envelope.
2. One week after the first mailing a reminder postcard was sent to all members of the sample using first-class mail.
3. Two weeks after the reminder mailing a second wave of survey forms was sent to nonrespondents using first-class mail.

A computerized receipt control system was implemented to monitor effectively the status of all survey forms. Returned forms were scanned, recorded, and necessary actions were taken to remedy any problems.

Table 1

Number of Former Students in the Sample and Number that Returned the Survey Form

College	All Former Students[a]	Students in Sample	Undeliverable	First Return	Second Return	Both Returns	Return Rate(%)
1	125	74	10	11	13	24	32.4
2	82	50	3	13	10	23	46.0
3	93	93	6	26	25	51	54.8
4	102	85	16	25	14	39	45.9
5	259	133	14	40	18	58	43.6
6	224	102	16	31	19	50	49.0
7	244	125	21	26	18	44	35.2
8	127	80	25	15	15	30	37.5
9	95	84	16	22	17	39	46.4
10	684	150	22	19	22	41	27.3
11	840	162	40	24	24	48	29.6
12	59	52	6	12	13	25	48.1
13	59	41	8	12	5	17	41.5
14	120	89	16	24	15	39	43.8
15	142	95	23	15	20	35	36.8
16	82	82	16	20	19	39	47.6
17	84	72	17	14	19	33	45.8
18	91	68	18	10	19	29	42.6
19	187	100	18	20	21	41	41.0
20	229	119	9	21	28	49	41.2
21	367	124	13	32	21	53	42.7
22	92	54	12	18	7	25	46.3
23	162	85	17	21	5	26	30.6
24	547	115	33	19	12	31	26.9
25	422	96	6	19	20	39	40.6
Total	5,518	2,330	402	509	419	928	39.8

[a] The total number of students in the follow-up study data file for the college who responded to the employment survey, were either degree or certificate students, and who majored in one of the seven occupational areas selected for the study.

As shown in Table 1, 509 former students responded to the first mailing (22%), and an additional 419 responded to the second mailing (18%). If the undeliverables are excluded from computation, the overall response rate was 48%.

Employer survey. The employer survey was carried out between May 30 and July 31, 1989. The following process was followed:

1. The first wave of survey forms was sent using first-class mail with a postage-paid return envelope.
2. One week after the first mailing a reminder postcard was sent to all members of the employer sample using first-class mail.
3. Two weeks after the reminder was sent a second wave of survey forms was sent to nonrespondents.
4. Two weeks after the second mailing a telephone call was made to all nonrespondents asking for their help.
5. Immediately after the telephone calls a third wave of survey forms was sent to nonrespondents.

Table 2

Number of Employers in the Survey and Number that Returned the Form

Discipline	Employers	Undeliverable	First Return	Second Return	Third Return	All Returns	Return Rate(%)
Agriculture	8	1	3	2	1	6	75.0
Business	73	1	28	12	13	53	72.6
Computer & IS	41	0	13	7	4	24	58.5
Engineering	73	2	19	20	11	50	68.5
Health	49	2	19	9	11	39	79.6
Consumer Ed.	21	0	7	3	3	13	61.9
Public Affairs	41	0	15	10	8	33	80.5
Total	306	6	104	63	51	218	71.2

As seen in Table 2, 104 of the 306 targeted employers responded to the first mailing (34%), 63 to the second mailing (21%), and 51 to the third mailing (16%). The overall response rate was 71%.

Data Analyses

The initial analysis for the former student data was a simple tabulation of the responses to the 46 items listed on the survey form. Corresponding percentages were computed for each item for each of the three response categories: Extremely Important, Important, and Not Important. This analysis was done by occupational area and by program level (degree vs. certificate programs) as well as for all groups combined. For the items added by the respondents, a content analysis was made to identify the most frequently mentioned topics or themes.

The second analysis for the former student data was to compute the average rating for each of the 46 items. The highest possible mean rating was 3.0 (when all respondents considered the item Extremely Important), the lowest 1.0 (when all respondents considered the item Not Important). This analysis was conducted to simplify the process of rank ordering the 46 items in terms of their importance as perceived by the respondents. The mean ratings were used to compare the perceptions of different groups, such as respondents from different occupational areas or degree vs. certificate programs.

Similar data analyses were conducted with the employer data. The results were also compared with those from the former students. The major findings are presented in the Results section below.

RESULTS

Findings from the data analyses are presented in this section in three parts: perceptions of the former vocational education students, perceptions of the employers of former vocational education students, and a comparison of the perceptions of the former students and their employers.

Perceptions of the Former Vocational Education Students

Usable data were obtained for 910 of the 928 former students who responded to the survey. Table 3 shows the number of former students for whom data were available by occupational area and program level. As mentioned in the Method section, percentage responses for Extremely Important, Important, and Not Important were computed for each item. These results for all former students are shown in Appendix D. Similar results for individual occupational areas were provided to the Chancellor's Office as a separate document. The average ratings of the 910 students were also obtained for the importance of each item for current job performance and for career advancement. Then, a mean rating of 2.5 was used as a cut-off point for an item perceived by the

Table 3

Number of Former Students for Whom Data Are Available

	No. of Students in the Sample			No. Students for Whom Data Are Available		
	Degree	Certif	All	Degree	Certif	All
Agriculture	46	40	86	18	15	33
Business	275	260	535	112	110	222
Computer & IS	176	136	312	70	49	119
Engineering	246	248	494	99	96	195
Health	230	203	433	88	67	155
Consumer Ed.	71	50	121	34	31	65
Public Affairs	182	167	349	64	57	121
Total	1,266	1,104	2,330	485	425	910

former students as very important. For an item to have a mean rating of 2.5, at least half the respondents would have said that the item was extremely important and the rest would have said it is important.

As shown in Table 4, 20 items were considered very important by the former vocational students for their current job performance and for their career advancement. They were:

- Performing tasks accurately
- Dependability
- Positive work attitude
- Attendance and punctuality
- Ability to follow instructions
- Honesty and ethical behavior
- Ability to work independently
- Reading and comprehending job-related material
- Getting along with others
- Accepting responsibility for one's actions
- Self-assurance/self-confidence
- Working cooperatively as a member of a team
- Effectively communicating verbally
- Listening attentively
- Following rules and policies
- Ability to communicate effectively in small groups
- Decision making skills
- Problem solving skills
- Reasoning ability
- Doing more than what is minimally required

In addition, the former students considered "Appropriate dress and grooming" very important for their current job performance, while the following 10 items were very important for their career advancement, especially the first two ("Taking initiative" and "Effectively communicating in writing").

- Taking initiative
- Effectively communicating in writing
- Accepting constructive criticism
- Being assertive when necessary

Table 4

Average Ratings of the Importance of the Items by All Former Students
(N=910)

Item No.	Knowledge, Skill, or Ability	Mean Rating: Current Job	Mean Rating: Career Advanc
2	Performing tasks accurately	2.8	2.8
15	Dependability	2.8	2.8
46	Positive work attitude	2.7	2.8
1	Attendance and punctuality	2.7	2.7
19	Ability to follow instructions	2.7	2.7
24	Honesty and ethical behavior	2.7	2.7
42	Ability to work independently	2.7	2.7
5	Reading & comprehending job-related materials	2.6	2.7
22	Getting along with others	2.6	2.7
36	Accepting responsibility for one's actions	2.6	2.7
38	Self-assurance/self-confidence	2.6	2.7
43	Working cooperatively as team member	2.6	2.7
44	Effectively communicating verbally	2.6	2.7
28	Listening attentively	2.6	2.6
37	Following rules and policies	2.6	2.6
9	Ability to comm. effectively in small groups	2.5	2.6
14	Decision making skills	2.5	2.7
33	Problem solving skills	2.5	2.6
34	Reasoning ability	2.5	2.6
35	Doing more than minimally required	2.5	2.6
16	Appropriate dress and grooming	2.5	2.4
26	Taking initiative	2.4	2.7
45	Effectively communicating in writing	2.4	2.7
3	Accepting constructive criticism	2.4	2.5
4	Being assertive when necessary	2.4	2.5
8	Adapting to change in the workplace	2.4	2.5
13	Thinking critically	2.4	2.5
17	Figuring out better way to get things done	2.4	2.5
18	Flexibility to changes in job requirements	2.4	2.5
27	Revising judgment (open-mindedness)	2.4	2.5
29	Loyalty to company or employer	2.4	2.5
23	Following good health practices	2.3	2.3
32	Persistence	2.3	2.4
7	Doing job-related math computations	2.1	2.2
12	Being creative	2.1	2.3
39	Sensitivity to other cultures	2.1	2.2
6	Writing memos, letters, or reports	2.0	2.3
10	Using a computer	2.0	2.2
11	Knowledge & application of codes, laws, regs	2.0	2.1
40	Under. basic scientific concepts & principles	2.0	2.0
25	Interpreting numerical tables & reports	1.9	2.1
30	Public speaking skills	1.8	2.2
31	Understand roles of social instit. & organ.	1.8	2.0
21	Knowledge, application of economic principles	1.7	1.9
41	Under. & participating in political processes	1.5	1.7
20	Speaking or writing foreign language(s)	1.3	1.4

- Adapting to change in the workplace
- Thinking critically (critical thinking skills)
- Figuring out a better way to get things done
- Flexibility to changes in job requirements
- Revising judgment in light of evidence or new facts (open-mindedness)
- Loyalty to company or employer

The findings from the former students seem to validate the importance of good work habits, work attitudes, and other positive work behaviors. Also, competencies in the areas of interpersonal skills, communication skills, and problem solving skills were considered very important.

One of the study objectives was to obtain the perceptions of former vocational education students who were in degree programs and in certificate programs. The mean rating scores for each item for the two groups are presented in Tables 5 and 6. The ratings for current job performance are shown in Table 5, those for career advancement in Table 6.

The first 19 items considered very important for their current job by both degree and certificate students were identical. They were:

- Performing tasks accurately
- Dependability
- Attendance and punctuality
- Honesty and ethical behavior
- Ability to work independently
- Positive work attitude
- Reading and comprehending job-related material
- Accepting responsibility for one's actions
- Ability to follow instructions
- Working cooperatively as a member of a team
- Getting along with others
- Listening attentively
- Following rules and policies
- Self-assurance/self-confidence
- Effectively communicating verbally
- Decision making skills
- Problem solving skills

Table 5

Average Ratings of the Importance of the Items for Current Job Performance by Degree and Certificate Students

Item No.	Knowledge, Skill, or Ability	Mean Rating Degree (N=485)	Mean Rating Certif (N=425)
2	Performing tasks accurately	2.8	2.8
15	Dependability	2.8	2.8
1	Attendance and punctuality	2.7	2.7
24	Honesty and ethical behavior	2.7	2.7
42	Ability to work independently	2.7	2.7
46	Positive work attitude	2.7	2.7
5	Reading & comprehending job-related materials	2.7	2.6
36	Accepting responsibility for one's actions	2.7	2.6
19	Ability to follow instructions	2.6	2.7
43	Working cooperatively as team member	2.6	2.7
22	Getting along with others	2.6	2.6
28	Listening attentively	2.6	2.6
37	Following rules and policies	2.6	2.6
38	Self-assurance/self-confidence	2.6	2.6
44	Effectively communicating verbally	2.6	2.6
14	Decision making skills	2.6	2.5
33	Problem solving skills	2.6	2.5
34	Reasoning ability	2.6	2.5
9	Ability to comm. effectively in small groups	2.5	2.5
4	Being assertive when necessary	2.4	2.5
35	Doing more than minimally required	2.4	2.5
3	Accepting constructive criticism	2.4	2.4
18	Flexibility to changes in job requirements	2.4	2.4
26	Taking initiative	2.4	2.4
27	Revising judgment (open-mindedness)	2.4	2.4
45	Effectively communicating in writing	2.4	2.4
8	Adapting to change in the workplace	2.4	2.3
13	Thinking critically	2.4	2.3
29	Loyalty to company or employer	2.4	2.3
17	Figuring out better way to get things done	2.3	2.4
23	Following good health practices	2.3	2.3
32	Persistence	2.3	2.3
16	Appropriate dress and grooming	2.2	2.3
7	Doing job-related math computations	2.2	2.1
6	Writing memos, letters, or reports	2.1	2.1
12	Being creative	2.1	2.1
39	Sensitivity to other cultures	2.1	2.1
10	Using a computer	2.0	2.0
11	Knowledge & application of codes, laws, regs	2.0	2.0
40	Under. basic scientific concepts & principles	2.0	2.0
25	Interpreting numerical tables & reports	1.8	1.9
30	Public speaking skills	1.8	1.8
31	Understand roles of social instit. & organ.	1.8	1.8
21	Knowledge, application of economic principles	1.6	1.7
41	Under. & participating in political processes	1.5	1.5
20	Speaking or writing foreign language(s)	1.3	1.3

- Reasoning ability
- Ability to communicate effectively in small groups

In addition, the students who had been in certificate programs considered two items as very important: "Being assertive when necessary," and "Doing more than what is minimally required. In general, however, the perceptions of these two groups of former students were strikingly similar.

Regarding the importance of the items for career advancement (Table 6), both the degree and certificate groups considered the same 30 items as very important. The similarity of their perceptions was more striking here than those revealed with regard to the importance of the items for current job performance. Also, it should be noted that these 30 items considered very important for career advancement included all the 22 items that were considered very important for current job performance.

Another objective of the study was to obtain the perceptions of former vocational students who were in different occupational area programs. Data were collected and analyzed for the seven occupational disciplines with the largest vocational student enrollments. The results are shown in Table 7 below.

There was a considerable difference in the number of items identified as very important among the seven disciplines, ranging from 17 (for Computer & Information Science) to 29 (for Consumer Education & Home Economics). The following 13 items were considered very important for all seven disciplines:

- Attendance and punctuality
- Performing tasks accurately
- Reading and comprehending job-related materials
- Dependability
- Ability to follow instructions
- Getting along with others
- Honesty and ethical behavior
- Listening attentively
- Accepting responsibility for one's actions
- Following rules and policies
- Ability to work independently
- Working cooperatively as a member of a team
- Positive work attitude

Table 6

Average Ratings of the Importance of the Items for Career Advancement by Degree and Certificate Students

Item No.	Knowledge, Skill, or Ability	Mean Rating Degree (N=485)	Mean Rating Certif (N=425)
2	Performing tasks accurately	2.8	2.8
15	Dependability	2.8	2.8
46	Positive work attitude	2.8	2.8
1	Attendance and punctuality	2.7	2.7
5	Reading & comprehending job-related materials	2.7	2.7
14	Decision making skills	2.7	2.7
24	Honesty and ethical behavior	2.7	2.7
36	Accepting responsibility for one's actions	2.7	2.7
38	Self-assurance/self-confidence	2.7	2.7
42	Ability to work independently	2.7	2.7
44	Effectively communicating verbally	2.7	2.7
19	Ability to follow instructions	2.6	2.7
22	Getting along with others	2.6	2.7
35	Doing more than minimally required	2.6	2.7
43	Working cooperatively as team member	2.6	2.7
26	Taking initiative	2.6	2.6
28	Listening attentively	2.6	2.6
33	Problem solving skills	2.6	2.6
34	Reasoning ability	2.6	2.6
37	Following rules and policies	2.6	2.6
45	Effectively communicating in writing	2.6	2.6
9	Ability to comm. effectively in small groups	2.5	2.6
3	Accepting constructive criticism	2.5	2.5
4	Being assertive when necessary	2.5	2.5
8	Adapting to change in the workplace	2.5	2.5
13	Thinking critically	2.5	2.5
17	Figuring out better way to get things done	2.5	2.5
18	Flexibility to changes in job requirements	2.5	2.5
27	Revising judgment (open-mindedness)	2.5	2.5
29	Loyalty to company or employer	2.5	2.5
16	Appropriate dress and grooming	2.4	2.4
32	Persistence	2.4	2.4
6	Writing memos, letters, or reports	2.3	2.3
12	Being creative	2.3	2.3
23	Following good health practices	2.3	2.3
10	Using a computer	2.2	2.2
39	Sensitivity to other cultures	2.2	2.2
7	Doing job-related math computations	2.2	2.1
30	Public speaking skills	2.2	2.1
11	Knowledge & application of codes, laws, regs	2.1	2.1
40	Under. basic scientific concepts & principles	2.1	2.0
25	Interpreting numerical tables & reports	2.0	2.1
31	Understand roles of social instit. & organ.	2.0	1.9
21	Knowledge, application of economic principles	1.8	1.9
41	Under. & participating in political processes	1.7	1.6
20	Speaking or writing foreign language(s)	1.5	1.4

Table 7

Average Former Student Rating of the Importance of the Items for Current Job Performance by Discipline

Knowledge, Skill, or Ability	Agri (N=33)	Bus (N=222)	Comp (N=119)	Engin (N=195)	Health (N=155)	Con Ed (N=65)	Pub Aff (N=121)
Attendance and punctuality	2.7*	2.7*	2.6*	2.7*	2.8*	2.8*	2.9*
Performing tasks accurately	2.8*	2.8*	2.7*	2.7*	2.9*	2.8*	2.8*
Accepting constructive criticism	2.5*	2.4	2.3	2.3	2.4	2.5*	2.5*
Being assertive when necessary	2.4	2.5*	2.2	2.3	2.5*	2.5*	2.6*
Read, comprehend job-related materials	2.5*	2.7*	2.6*	2.7*	2.7*	2.6*	2.6*
Writing memos, letters, or reports	1.9	2.2	2.1	2.0	2.0	2.0	2.3
Doing job-related math computations	2.0	2.2	2.1	2.3	2.2	1.9	1.8
Adapting to change in the workplace	2.5*	2.4	2.3	2.3	2.4	2.5*	2.4
Comm. effectively in small groups	2.4	2.5*	2.4	2.5*	2.5*	2.5*	2.6*
Using a computer	1.6	2.3	2.5*	2.1	1.7	1.7	1.6
Knowledge of codes, laws, regulations	2.1	2.0	1.6	1.9	2.0	2.0	2.3
Being creative	2.2	2.0	2.0	2.1	2.0	2.5*	2.3
Thinking critically	2.3	2.3	2.4	2.4	2.4	2.4	2.4
Decision making skills	2.6*	2.5*	2.4	2.5*	2.7*	2.6*	2.6*
Dependability	2.8*	2.8*	2.7*	2.7*	2.9*	2.8*	2.9*
Appropriate dress and grooming	2.4	2.3	2.1	1.9	2.4	2.5*	2.4
Figuring out better get things done	2.5*	2.4	2.3	2.4	2.3	2.4	2.3
Flexibility to changes job requirements	2.4	2.5*	2.4	2.3	2.4	2.5*	2.4
Ability to follow instructions	2.8*	2.6*	2.6*	2.7*	2.7*	2.7*	2.7*
Speaking, writing foreign languages(s)	1.3	1.3	1.2	1.2	1.4	1.3	1.4
Knowledge of economic principles	1.7	1.9	1.6	1.6	1.5	1.8	1.5
Getting along with others	2.7*	2.6*	2.5*	2.5*	2.7*	2.8*	2.8*
Following good health practices	2.4	2.2	2.0	2.1	2.7*	2.5*	2.5*
Honesty and ethical behavior	2.8*	2.7*	2.5*	2.5*	2.9*	2.7*	2.8*
Interpreting numerical tables & reports	1.9	1.9	1.9	2.1	1.7	1.7	1.6
Taking initiative	2.4	2.4	2.3	2.4	2.5*	2.5*	2.6*
Revising judgment (open-mindedness)	2.4	2.4	2.3	2.3	2.5*	2.4	2.5*
Listening attentively	2.7*	2.6*	2.5*	2.5*	2.6*	2.7*	2.7*
Loyalty to company or employer	2.4	2.4	2.2	2.2	2.3	2.5*	2.6*
Public speaking skills	2.0	1.8	1.8	1.7	1.8	1.9	2.1
Understand roles of social institutions	1.6	1.7	1.5	1.5	2.3	2.1	2.2
Persistence	2.3	2.3	2.2	2.3	2.3	2.3	2.3
Problem solving skills	2.5*	2.4	2.6*	2.6*	2.5*	2.5*	2.5*
Reasoning ability	2.4	2.5*	2.5*	2.6*	2.6*	2.5*	2.6*
Doing more than minimally required	2.6*	2.5*	2.4	2.4	2.5*	2.5*	2.4
Accepting responsibility for actions	2.7*	2.6*	2.5*	2.5*	2.8*	2.7*	2.8*
Following rules and policies	2.7*	2.5*	2.5*	2.5*	2.7*	2.6*	2.8*
Self-assurance/self-confidence	2.7*	2.5*	2.4	2.5*	2.6*	2.6*	2.6*
Sensitivity to other cultures	2.2	2.0	1.9	1.8	2.5*	2.4	2.4
Under. basic scientific concepts	2.1	1.7	1.8	2.3	2.4	1.8	1.9
Understand political processes	1.4	1.5	1.4	1.6	1.4	1.6	1.6
Ability to work independently	2.8*	2.8*	2.6*	2.6*	2.7*	2.7*	2.7*
Working cooperatively as team member	2.7*	2.6*	2.5*	2.6*	2.8*	2.7*	2.7*
Effectively communicating verbally	2.7*	2.6*	2.6*	2.4	2.8*	2.7*	2.7*
Effectively communicating in writing	2.3	2.4	2.4	2.2	2.5*	2.3	2.5*
Positive work attitude	2.9*	2.7*	2.6*	2.6*	2.7*	2.8*	2.8*

Note.- * indicates a value 2.5 or greater.

The items that were considered as very important for only one specific discipline were:

- Using a computer (Computer Science)
- Being creative (Consumer Ed)
- Appropriate dress and grooming (Consumer Ed)
- Figuring out a better way to get things done (Agriculture)
- Sensitivity to other cultures (Health)

The results for the seven occupational groups are in good agreement as to which items are very important for job performance, even though some groups have unique needs.

Perceptions of the Employers of Former Vocational Students

One of the study objectives was to determine the perceptions of the employers of former vocational education students with regard to the job-related competencies and knowledge of general education that the former students should possess in order to succeed and advance in their careers. Usable data were available for 214 supervisors of former vocational students. Percent responses for Extremely Important, Important, and Not Important were computed for each item and the results are shown in Appendix E. Also, an average rating score was computed for each item. The average ratings for all employers are shown in Table 8. As with the student data, an item with a mean rating of 2.5 or higher was considered as very important for an employee's current job performance or for career advancement.

The following 13 items were considered very important for an employee's current job performance as well as for career advancement:

- Dependability
- Attendance and punctuality
- Performing tasks accurately
- Honesty and ethical behavior
- Positive work attitude
- Ability to follow instructions
- Working cooperatively as a member of a team
- Reading and comprehending job-related material
- Getting along with others
- Accepting responsibility for one's actions

Table 8

Average Ratings of the Importance of the Items by All Employers
(N=214)

Item No.	Knowledge, Skill, or Ability	Mean Rating for Employee's Current Job	Mean Rating for Employee's Career Advanc
15	Dependability	2.9	2.9
1	Attendance and punctuality	2.8	2.8
2	Performing tasks accurately	2.8	2.8
24	Honesty and ethical behavior	2.8	2.8
46	Positive work attitude	2.7	2.8
19	Ability to follow instructions	2.7	2.7
43	Working cooperatively as team member	2.7	2.7
5	Reading & comprehending job-related materials	2.6	2.7
22	Getting along with others	2.6	2.7
36	Accepting responsibility for one's actions	2.6	2.7
37	Following rules and policies	2.6	2.6
44	Effectively communicating verbally	2.5	2.7
28	Listening attentively	2.5	2.6
3	Accepting constructive criticism	2.4	2.6
8	Adapting to change in the workplace	2.4	2.6
18	Flexibility to changes in job requirements	2.4	2.6
29	Loyalty to company or employer	2.4	2.6
33	Problem solving skills	2.4	2.6
34	Reasoning ability	2.4	2.6
42	Ability to work independently	2.4	2.6
14	Decision making skills	2.3	2.7
35	Doing more than minimally required	2.3	2.7
26	Taking initiative	2.3	2.6
27	Revising judgment (open-mindedness)	2.3	2.6
38	Self-assurance/self-confidence	2.3	2.6
9	Ability to comm. effectively in small groups	2.3	2.5
23	Following good health practices	2.3	2.4
45	Effectively communicating in writing	2.2	2.6
13	Thinking critically	2.2	2.5
17	Figuring out better way to get things done	2.2	2.5
4	Being assertive when necessary	2.2	2.4
16	Appropriate dress and grooming	2.2	2.4
39	Sensitivity to other cultures	2.2	2.3
12	Being creative	2.1	2.4
32	Persistence	2.1	2.3
7	Doing job-related math computations	2.1	2.2
6	Writing memos, letters, or reports	1.9	2.3
10	Using a computer	1.9	2.1
11	Knowledge & application of codes, laws, regs	1.8	2.1
40	Under. basic scientific concepts & principles	1.8	1.9
25	Interpreting numerical tables & reports	1.7	2.1
30	Public speaking skills	1.6	2.1
31	Understand roles of social instit. & organ.	1.6	1.8
21	Knowledge, application of economic principles	1.4	1.8
41	Under. & participating in political processes	1.4	1.7
20	Speaking or writing foreign language(s)	1.2	1.4

- Following rules and policies
- Effectively communicating verbally
- Listening attentively

In addition, 16 items were considered very important by the employers for their employee's career advancement. They were:

- Accepting constructive criticism
- Adapting to change in the workplace
- Flexibility to changes in job requirements
- Loyalty to company or employer
- Problem solving skills
- Reasoning ability
- Ability to work independently
- Decision making skills
- Doing more than what is minimally required
- Taking initiative
- Revising judgment in light of evidence or new facts (open-mindedness)
- Self-assurance/self-confidence
- Ability to communicate effectively in small groups
- Effectively communicating in writing
- Thinking critically (critical thinking skills)
- Figuring out a better way to get things done

Two of these items ("Decision making skills" and "Doing more than what is minimally required") were rated particularly high for career advancement (2.7) compared with their ratings for current job performance (2.3). It is also of interest to note the employers considered each of the 46 items either as important or more important for career advancement than for current job performance.

The results of the analyses of employer data by the occupational area of the former students are shown in Table 9. Only five of the seven occupational areas are shown in the table since there were too few employer responses in the areas of Agriculture and Consumer Education. The number of items that were considered very important varied considerably among the occupational

Table 9

Average Employer Ratings of the Importance of the Items for Current Job Performance by Discipline

Knowledge, Skill, or Ability	Bus (N=51)	Comp (N=24)	Engin (N=49)	Health (N=37)	Pub Af (N=34)
Attendance and punctuality	2.7*	2.7*	2.8*	2.9*	2.9*
Performing tasks accurately	2.7*	2.7*	2.9*	2.9*	2.8*
Accepting constructive criticism	2.3	2.4	2.3	2.4	2.5*
Being assertive when necessary	2.2	2.1	2.1	2.4	2.3
Read, comprehend job-related materials	2.5*	2.6*	2.7*	2.6*	2.5*
Writing memos, letters, or reports	2.1	1.9	1.9	1.8	1.9
Doing job-related math computations	2.1	2.3	2.3	2.2	1.7
Adapting to change in the workplace	2.2	2.3	2.4	2.6*	2.4
Comm. effectively in small groups	2.2	2.4	2.1	2.3	2.3
Using a computer	2.0	2.4	2.0	1.9	1.6
Knowledge of codes, laws, regulations	1.7	1.4	1.8	2.1	2.1
Being creative	1.9	2.3	2.0	1.9	2.2
Thinking critically	2.2	2.2	2.0	2.5*	2.1
Decision making skills	2.2	2.3	2.2	2.5*	2.4
Dependability	2.7*	2.8*	2.9*	2.9*	2.9*
Appropriate dress and grooming	2.2	1.9	1.9	2.5*	2.4
Figuring out better get things done	2.1	2.5*	2.2	2.2	2.2
Flexibility to changes job requirements	2.3	2.4	2.3	2.4	2.5*
Ability to follow instructions	2.6*	2.7*	2.7*	2.8*	2.8*
Speaking, writing foreign languages(s)	1.2	1.0	1.1	1.3	1.4
Knowledge of economic principles	1.5	1.4	1.4	1.5	1.4
Getting along with others	2.5*	2.6*	2.5*	2.7*	2.7*
Following good health practices	2.2	2.2	2.1	2.5*	2.5*
Honesty and ethical behavior	2.7*	2.8*	2.8*	2.9*	2.9*
Interpreting numerical tables & reports	1.8	1.9	2.0	1.6	1.5
Taking initiative	2.2	2.4	2.2	2.4	2.4
Revising judgment (open-mindedness)	2.3	2.4	2.3	2.3	2.4
Listening attentively	2.5*	2.6*	2.4	2.5*	2.5*
Loyalty to company or employer	2.3	2.4	2.4	2.4	2.4
Public speaking skills	1.6	1.8	1.4	1.6	1.8
Understand roles of social institutions	1.4	1.3	1.3	2.0	1.8
Persistence	2.1	2.2	2.1	2.1	2.2
Problem solving skills	2.3	2.4	2.4	2.4	2.2
Reasoning ability	2.2	2.5*	2.3	2.5*	2.4
Doing more than minimally required	2.3	2.3	2.3	2.2	2.4
Accepting responsibility for actions	2.4	2.5*	2.5*	2.7*	2.7*
Following rules and policies	2.5*	2.5*	2.5*	2.6*	2.8*
Self-assurance/self-confidence	2.2	2.5*	2.2	2.2	2.4
Sensitivity to other cultures	2.1	2.1	2.0	2.2	2.5*
Under. basic scientific concepts	1.5	1.7	2.0	2.1	1.6
Understand political processes	1.3	1.3	1.4	1.4	1.6
Ability to work independently	2.3	2.5*	2.4	2.5*	2.5*
Working cooperatively as team member	2.5*	2.6*	2.7*	2.8*	2.6*
Effectively communicating verbally	2.5*	2.5*	2.3	2.5*	2.5*
Effectively communicating in writing	2.3	2.4	2.1	2.3	2.3
Positive work attitude	2.6*	2.7*	2.7*	2.8*	2.8*

Note.- * indicates a value 2.5 or greater.

areas, ranging from 11 (Engineering) to 20 (Public Affairs). Ten items were considered very important for an employee's current job performance for all five occupational areas. They were:

- Attendance and punctuality
- Performing tasks accurately
- Reading and comprehending job-related materials
- Dependability
- Ability to follow instructions
- Getting along with others
- Honesty and ethical behavior
- Following rules and policies
- Working cooperatively as a member of a team
- Positive work attitude

The items that were considered very important for only one occupational area were:

- Adapting to change in the workplace (Health)
- Thinking critically (Health)
- Decision making skills (Health)
- Appropriate dress and grooming (Health)
- Figuring out a better way to get things done (Computer Science)
- Flexibility to changes in job requirements (Public Affairs)
- Self-assurance/self-confidence (Computer Science)
- Sensitivity to other cultures (Public Affairs)

The data clearly show that there are some differences among the occupational areas regarding what items are considered very important for an employee's current job performance. However, the results also indicate that the five occupational areas have more similarities than differences in terms of which items are considered very important.

Comparisons of the Perceptions of Former Students and Their Employers

The perceptions of former vocational students were compared with those of their employers. The results for current job performance are shown in Table 10. Thirteen items were considered very important by both groups. They were:

- Dependability
- Performing tasks accurately
- Attendance and punctuality

Table 10

Average Ratings of the Importance of the Items for Current Job Performance by Former Students and Their Employers

Item No.	Knowledge, Skill, or Ability	Mean Rating: Former Students (N=910)	Mean Rating: Employers (N=214)
15	Dependability	2.8	2.9
2	Performing tasks accurately	2.8	2.8
1	Attendance and punctuality	2.7	2.8
24	Honesty and ethical behavior	2.7	2.8
19	Ability to follow instructions	2.7	2.7
46	Positive work attitude	2.7	2.7
42	Ability to work independently	2.7	2.4
43	Working cooperatively as team member	2.6	2.7
5	Reading & comprehending job-related materials	2.6	2.6
22	Getting along with others	2.6	2.6
36	Accepting responsibility for one's actions	2.6	2.6
37	Following rules and policies	2.6	2.6
28	Listening attentively	2.6	2.5
44	Effectively communicating verbally	2.6	2.5
38	Self-assurance/self-confidence	2.6	2.3
33	Problem solving skills	2.5	2.4
34	Reasoning ability	2.5	2.4
9	Ability to comm. effectively in small groups	2.5	2.3
14	Decision making skills	2.5	2.3
35	Doing more than minimally required	2.5	2.3
16	Appropriate dress and grooming	2.5	2.2
3	Accepting constructive criticism	2.4	2.4
8	Adapting to change in the workplace	2.4	2.4
18	Flexibility to changes in job requirements	2.4	2.4
29	Loyalty to company or employer	2.4	2.4
4	Being assertive when necessary	2.4	2.2
13	Thinking critically	2.4	2.2
17	Figuring out better way to get things done	2.4	2.2
26	Taking initiative	2.4	2.3
27	Revising judgment (open-mindedness)	2.4	2.3
45	Effectively communicating in writing	2.4	2.2
23	Following good health practices	2.3	2.3
32	Persistence	2.3	2.1
7	Doing job-related math computations	2.1	2.1
12	Being creative	2.1	2.1
39	Sensitivity to other cultures	2.1	2.2
6	Writing memos, letters, or reports	2.0	1.9
10	Using a computer	2.0	1.9
11	Knowledge & application of codes, laws, regs	2.0	1.8
40	Under. basic scientific concepts & principles	2.0	1.8
25	Interpreting numerical tables & reports	1.9	1.7
30	Public speaking skills	1.8	1.6
31	Understand roles of social instit. & organ.	1.8	1.6
21	Knowledge, application of economic principles	1.7	1.4
41	Under. & participating in political processes	1.5	1.4
20	Speaking or writing foreign language(s)	1.3	1.2

- Honesty and ethical behavior
- Ability to follow instructions
- Positive work attitude
- Working cooperatively as a member of a team
- Reading and comprehending job-related material
- Getting along with others
- Accepting responsibility for one's actions
- Following rules and policies
- Listening attentively
- Effectively communicating verbally

In addition, the former vocational education students (but not the employers) considered the following eight items as very important:

- Ability to work independently
- Self-assurance/self-confidence
- Problem solving skills
- Reasoning ability
- Ability to communicate effectively in small groups
- Decision making skills
- Doing more than what is minimally required
- Appropriate dress and grooming

The results indicate that generally the perceptions of the former students and the employers are similar. However, there were four items that the former student group rated much higher than the employer group. They were: "Ability to work independently," "Self-assurance/self-confidence," "Appropriate dress and grooming," and "Knowledge and application of economic principles related to business and personal finances."

Table 11 shows the average ratings of the items by the former students and employers in terms of an employee's career advancement. Twenty-nine of the 46 items were considered very important by both groups. Only one additional item was considered very important by the student group ("Being assertive when necessary"). Not only did the two groups identify the same 29 items as very important, the rank orders of the items for the two groups are almost identical. This indicates that there is little difference between former students and employers regarding which items are perceived as very important for an employee's career advancement.

Table 11

Average Ratings of the Importance of the Items for Career Advancement by Former Students and Their Employers

Item No.	Knowledge, Skill, or Ability	Mean Rating: Former Students (N=910)	Mean Rating: Employers (N=214)
15	Dependability	2.8	2.9
2	Performing tasks accurately	2.8	2.8
46	Positive work attitude	2.8	2.8
1	Attendance and punctuality	2.7	2.8
24	Honesty and ethical behavior	2.7	2.8
5	Reading & comprehending job-related materials	2.7	2.7
14	Decision making skills	2.7	2.7
19	Ability to follow instructions	2.7	2.7
22	Getting along with others	2.7	2.7
36	Accepting responsibility for one's actions	2.7	2.7
43	Working cooperatively as team member	2.7	2.7
44	Effectively communicating verbally	2.7	2.7
38	Self-assurance/self-confidence	2.7	2.6
42	Ability to work independently	2.7	2.6
35	Doing more than minimally required	2.6	2.7
26	Taking initiative	2.6	2.6
28	Listening attentively	2.6	2.6
33	Problem solving skills	2.6	2.6
34	Reasoning ability	2.6	2.6
37	Following rules and policies	2.6	2.6
45	Effectively communicating in writing	2.6	2.6
9	Ability to comm. effectively in small groups	2.6	2.5
3	Accepting constructive criticism	2.5	2.6
8	Adapting to change in the workplace	2.5	2.6
18	Flexibility to changes in job requirements	2.5	2.6
27	Revising judgment (open-mindedness)	2.5	2.6
29	Loyalty to company or employer	2.5	2.6
13	Thinking critically	2.5	2.5
17	Figuring out better way to get things done	2.5	2.5
4	Being assertive when necessary	2.5	2.4
16	Appropriate dress and grooming	2.4	2.4
32	Persistence	2.4	2.3
12	Being creative	2.3	2.4
23	Following good health practices	2.3	2.4
6	Writing memos, letters, or reports	2.3	2.3
39	Sensitivity to other cultures	2.2	2.3
7	Doing job-related math computations	2.2	2.2
10	Using a computer	2.2	2.1
30	Public speaking skills	2.2	2.1
11	Knowledge & application of codes, laws, regs	2.1	2.1
25	Interpreting numerical tables & reports	2.1	2.1
40	Under. basic scientific concepts & principles	2.0	1.9
31	Understand roles of social instit. & organ.	2.0	1.8
21	Knowledge, application of economic principles	1.9	1.8
41	Under. & participating in political processes	1.7	1.7
20	Speaking or writing foreign language(s)	1.4	1.4

RECOMMENDATIONS

An objective of the study was to make recommendations for curriculum improvement based on the findings. The following recommendations are offered:

1. In the perception of the former vocational education students and their employers, knowledge in general education areas was less important to success on the job than other job-related competencies. However, this should not be interpreted as an indication that general education subject areas are not important for the total development of vocational students at community colleges.

2. Many of the competencies that were considered very important by both former students and their employers belong to a category of positive work behaviors, such as performing tasks accurately, dependability, and attendance and punctuality. Even though vocational educators generally recognize the importance of these behaviors, they should be reminded of the need for promoting such behaviors in their students.

3. One category of important competencies identified by both students and employers was the ability to work well with others, such as getting along with others and working cooperatively as a team member. Vocational educators need to focus on helping their students acquire these competencies by the use of appropriate instructional methods, such as cooperative learning and small group projects.

4. Another category of important competencies was effective communication. It included ability to follow instructions, reading and comprehending job related materials, and effectively communicating verbally. This is the area where integration and cooperation with the general education program is required most. If desired, specially designed courses can be offered to vocational education students to help them acquire these competencies.

5. The 20 or so competencies that were identified as very important to success in work should be part of the vocational education curriculum at California community colleges. They should be made more specific and explicit, then integrated into the current vocational education curriculum.

6. Even though the results for the seven occupational groups generally agreed as to which competencies were very important to success in work, there were some unique competencies for specific occupational areas. Oc-

cupational area advisory committees should select a set of the most essential competencies based on the study findings, design appropriate learning experiences (method and content) for each competency, and disseminate the information to vocational instructors for possible use in their classes.

7. It is recommended that the study findings be disseminated to California community college instructional staff so that they have opportunities to react to and become aware of the importance of the various competencies to their students and employers.

8. Chancellor's Office staff should develop a checklist based on the findings of this study so that curriculum developers or vocational instructors can use it to review their vocational curriculum or courses to see how well they reflect the important competencies.

9. Curriculum developers and vocational instructors who attempt to integrate the important competencies into existing curriculum should pay as much attention to instructional methodology as to content so that the instructional practices optimally promote the development of such competencies in students.

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APPENDIX A

Participating Colleges

Bakersfield College
Cerritos College
Coastline College
Contra Costa College
DeAnza College
Diablo Valley College
Evergreen College
Fresno City College
Golden West College
Grossmont College
Long Beach City College
Los Angeles Pierce College
Moorpark College
Napa College
Orange Coast College
Oxnard College
Rio Hondo College
Riverside City College
San Diego City College
San Joaquin Delta College
San Jose City College
Rancho Santiago College
Santa Monica City College
Ventura College
West Coast College

APPENDIX B

Former Student Survey Form and Cover Letter

Survey of Former Vocational Education Students

Code number: _____

This survey is being conducted for the Chancellor's Office of the California Community Colleges to obtain information for the improvement of instruction for vocational education students.

3 - Extremely important
2 - Important
1 - Not important

Please circle one number in Column A **and** one number in Column B to indicate the importance of the knowledge, skill or ability listed below.

		A: Important for your current job performance			B: Important for your career advancement		
1.	Attendance and punctuality	3	2	1	3	2	1
2.	Performing tasks accurately	3	2	1	3	2	1
3.	Accepting constructive criticism	3	2	1	3	2	1
4.	Being assertive when necessary	3	2	1	3	2	1
5.	Reading and comprehending job-related materials	3	2	1	3	2	1
6.	Writing memos, letters, or reports	3	2	1	3	2	1
7.	Doing job-related math computations	3	2	1	3	2	1
8.	Adapting to change in the workplace	3	2	1	3	2	1
9.	Ability to communicate effectively in small groups	3	2	1	3	2	1
10.	Using a computer	3	2	1	3	2	1
11.	Knowledge and application of appropriate local, state, and federal government codes, laws, and regulations	3	2	1	3	2	1
12.	Being creative	3	2	1	3	2	1
13.	Thinking critically (critical thinking skills)	3	2	1	3	2	1
14.	Decision making skills	3	2	1	3	2	1
15.	Dependability	3	2	1	3	2	1
16.	Appropriate dress and grooming	3	2	1	3	2	1
17.	Figuring out a better way to get things done	3	2	1	3	2	1
18.	Flexibility to changes in job requirements	3	2	1	3	2	1
19.	Ability to follow instructions	3	2	1	3	2	1
20.	Speaking or writing one or more foreign languages	3	2	1	3	2	1
21.	Knowledge and application of economic principles related to business and personal finances	3	2	1	3	2	1
22.	Getting along with others	3	2	1	3	2	1
23.	Following good health practices	3	2	1	3	2	1
24.	Honesty and ethical behavior	3	2	1	3	2	1
25.	Interpreting numerical tables and reports	3	2	1	3	2	1
26.	Taking initiative	3	2	1	3	2	1
27.	Revising judgment in light of evidence or new facts (open-mindedness)	3	2	1	3	2	1
28.	Listening attentively	3	2	1	3	2	1
29.	Loyalty to company or employer	3	2	1	3	2	1
30.	Public speaking skills	3	2	1	3	2	1
31.	Understanding the purpose and role of social institutions and organizations (such as hospitals, schools, and community groups)	3	2	1	3	2	1

(Please see other side.)

	A			B		
	Important for your current job performance			Important for your career advancement		
32. Persistence	3	2	1	3	2	1
33. Problem solving skills	3	2	1	3	2	1
34. Reasoning ability	3	2	1	3	2	1
35. Doing more than what is minimally required	3	2	1	3	2	1
36. Accepting responsibility for one's actions	3	2	1	3	2	1
37. Following rules and policies	3	2	1	3	2	1
38. Self-assurance/self-confidence	3	2	1	3	2	1
39. Sensitivity to other cultures	3	2	1	3	2	1
40. Understanding basic scientific concepts and principles	3	2	1	3	2	1
41. Understanding and participating in political processes (such as local government operations and labor unions) as applied to work and personal situations	3	2	1	3	2	1
42. Ability to work independently	3	2	1	3	2	1
43. Working cooperatively as a member of a team	3	2	1	3	2	1
44. Effectively communicating verbally	3	2	1	3	2	1
45. Effectively communicating in writing	3	2	1	3	2	1
46. Positive work attitude	3	2	1	3	2	1
If you think other things are important, please add them below.						
	3	2	1	3	2	1
	3	2	1	3	2	1
	3	2	1	3	2	1

We would like to send a questionnaire like this one to some employers. If it is all right with you for us to send a questionnaire to your employer, please provide the following information. **YOUR EMPLOYER WILL NOT BE GIVEN YOUR NAME.** The employers will be asked about the importance of each item for employees in general.

OPTIONAL

Name of your immediate supervisor ( ) Telephone number

Name of company or firm

Company or firm mailing address

City State ZIP

Thank you very much for your help. **Please return this form in the postage-paid envelope provided to Educational Evaluation and Research, Inc., 530 Oak Grove Avenue, Room 205, Menlo Park, CA 94025.**

Educational Evaluation and Research, Inc.
250 S. CASTANYA WAY
MENLO PARK, CALIFORNIA 94025
(415) 325-3254

March 1, 1989

Dear Former Vocational Education Student:

We are conducting a study for the Chancellor's Office of the California Community Colleges. We are seeking your opinions about the knowledge, skills, and abilities you need to succeed and advance in your career.

Please fill out the enclosed survey form and return it as soon as possible. A postage-paid return envelope is enclosed. You are not asked to give your name. All information that you provide will be absolutely confidential. It will be combined with data from other former students in the study to provide information to improve vocational education programs in California Community Colleges.

Directions for completing the form are given on the form itself. You should rate each item **twice**: once for its importance for your current job performance, and once for its importance for your career advancement.

Thank you for your help with this survey. You are contributing a great deal to the improvement of vocational education for those who will be attending the community colleges.

Sincerely,

Calvin E. Wright, PhD
President

CEW:s
Encl.

APPENDIX C

Employer Survey Form and Cover Letter

Survey of Employers of Former Vocational Education Students

This survey is being conducted for the Chancellor's Office of the California Community Colleges to obtain information for the improvement of instruction for vocational education students.

Code number: _____

Please circle one number in Column A **and** one number in Column B to indicate the importance of the knowledge, skill or ability listed below.

3 - Extremely important
2 - Important
1 - Not important

		A: Important for an employee's current job performance			B: Important for an employee's career advancement		
1.	Attendance and punctuality	3	2	1	3	2	1
2.	Performing tasks accurately	3	2	1	3	2	1
3.	Accepting constructive criticism	3	2	1	3	2	1
4.	Being assertive when necessary	3	2	1	3	2	1
5.	Reading and comprehending job-related materials	3	2	1	3	2	1
6.	Writing memos, letters, or reports	3	2	1	3	2	1
7.	Doing job-related math computations	3	2	1	3	2	1
8.	Adapting to change in the workplace	3	2	1	3	2	1
9.	Ability to communicate effectively in small groups	3	2	1	3	2	1
10.	Using a computer	3	2	1	3	2	1
11.	Knowledge and application of appropriate local, state, and federal government codes, laws, and regulations	3	2	1	3	2	1
12.	Being creative	3	2	1	3	2	1
13.	Thinking critically (critical thinking skills)	3	2	1	3	2	1
14.	Decision making skills	3	2	1	3	2	1
15.	Dependability	3	2	1	3	2	1
16.	Appropriate dress and grooming	3	2	1	3	2	1
17.	Figuring out a better way to get things done	3	2	1	3	2	1
18.	Flexibility to changes in job requirements	3	2	1	3	2	1
19.	Ability to follow instructions	3	2	1	3	2	1
20.	Speaking or writing one or more foreign languages	3	2	1	3	2	1
21.	Knowledge and application of economic principles related to business and personal finances	3	2	1	3	2	1
22.	Getting along with others	3	2	1	3	2	1
23.	Following good health practices	3	2	1	3	2	1
24.	Honesty and ethical behavior	3	2	1	3	2	1
25.	Interpreting numerical tables and reports	3	2	1	3	2	1
26.	Taking initiative	3	2	1	3	2	1

(Please see other side.)

	A			B		
	Important for an employee's current job performance			Important for an employee's career advancement		
27. Revising judgment in light of evidence or new facts (open-mindedness)	3	2	1	3	2	1
28. Listening attentively	3	2	1	3	2	1
29. Loyalty to company or employer	3	2	1	3	2	1
30. Public speaking skills	3	2	1	3	2	1
31. Understanding the purpose and role of social institutions and organizations (such as hospitals, schools, and community groups)	3	2	1	3	2	1
32. Persistence	3	2	1	3	2	1
33. Problem solving skills	3	2	1	3	2	1
34. Reasoning ability	3	2	1	3	2	1
35. Doing more than what is minimally required	3	2	1	3	2	1
36. Accepting responsibility for one's actions	3	2	1	3	2	1
37. Following rules and policies	3	2	1	3	2	1
38. Self-assurance/self-confidence	3	2	1	3	2	1
39. Sensitivity to other cultures	3	2	1	3	2	1
40. Understanding basic scientific concepts and principles	3	2	1	3	2	1
41. Understanding and participating in political processes (such as local government operations and labor unions) as applied to work and personal situations	3	2	1	3	2	1
42. Ability to work independently	3	2	1	3	2	1
43. Working cooperatively as a member of a team	3	2	1	3	2	1
44. Effectively communicating verbally	3	2	1	3	2	1
45. Effectively communicating in writing	3	2	1	3	2	1
46. Positive work attitude	3	2	1	3	2	1
If you think other things are important, please add them below.						
	3	2	1	3	2	1
	3	2	1	3	2	1
	3	2	1	3	2	1

Feel free to make any comments that you may wish.

Thank you very much for your help. **Please return this form in the postage-paid envelope provided to Educational Evaluation and Research, Inc., 530 Oak Grove Avenue, Room 205, Menlo Park, CA 94025.**

Educational Evaluation and Research, Inc.
250 S. CASTANYA WAY
MENLO PARK, CALIFORNIA 94025
(415) 325-3254

May 30, 1989

Dear Employer of Former Vocational Education Students:

We are conducting a study for the Chancellor's Office of the California Community Colleges. We are seeking your opinions about the knowledge, skills, and abilities employees need to succeed and advance in their careers.

Please fill out the enclosed survey form and return it as soon as possible in the postage-paid return envelope. All information that you provide will be absolutely confidential. It will be combined with data received from other employers that are surveyed for this study to provide information to improve vocational education programs in California Community Colleges.

Directions for completing the form are given on the form itself. You should rate each item **twice**: once for its importance for an employee's current job performance, and once for its importance for an employee's career advancement. You should answer to indicate the importance of each item for employees under your immediate supervision.

Thank you for your help with this survey. You are contributing a great deal to the improvement of vocational education for those who will be attending the community colleges. As a small token of our appreciation for your help, we will be sending you a summary report of the study after it is completed.

Sincerely,

Calvin E. Wright, PhD
President

474-1/EMPLETTR

APPENDIX D

RESULTS FOR ALL FORMER STUDENTS

Table D-1: Results for All Former Students: A. Importance for Current Job Performance

Table D-2: Results for All Former Students: B. Importance for Career Advancement

Table D-3: Results for Former Degree Students: A. Importance for Current Job Performance

Table D-4: Results for Former Degree Students: B. Importance for Career Advancement

Table D-5: Results for Former Certificate Students: A. Importance for Current Job

Table D-6: Results for Former Certificate Students: B. Importance for Career Advancement

Table D-1

Results for All Former Students: A. Importance for Current Job Performance (N=910)

	Knowledge, Skill, or Ability	3 Extremely Important	2 Impor- tant	1 Not Important	Mean
2	Performing tasks accurately	81.7	17.3	1.0	2.8
15	Dependability	80.6	17.8	1.7	2.8
1	Attendance and punctuality	73.9	23.9	2.2	2.7
19	Ability to follow instructions	68.9	28.8	2.2	2.7
24	Honesty and ethical behavior	70.8	26.1	3.1	2.7
42	Ability to work independently	72.0	25.0	3.0	2.7
46	Positive work attitude	72.0	25.8	2.2	2.7
5	Reading & comprehending job-related materials	67.4	29.7	2.9	2.6
22	Getting along with others	64.5	33.0	2.4	2.6
28	Listening attentively	61.8	34.3	3.9	2.6
36	Accepting responsibility for actions	67.3	28.8	3.8	2.6
37	Following rules and policies	63.2	33.6	3.1	2.6
38	Self-assurance/self-confidence	59.2	37.1	3.7	2.6
43	Working cooperatively as team member	68.6	26.6	4.8	2.6
44	Effectively communicating verbally	66.0	31.3	2.7	2.6
9	Ability to comm. effectively in small groups	54.8	37.9	7.3	2.5
14	Decision making skills	60.3	33.4	6.3	2.5
16	Appropriate dress and grooming	38.1	48.6	13.3	2.5
33	Problem solving skills	58.6	35.5	5.8	2.5
34	Reasoning ability	57.3	38.9	3.7	2.5
35	Doing more than minimally required	54.3	37.9	7.8	2.5
3	Accepting constructive criticism	44.2	51.0	4.8	2.4
4	Being assertive when necessary	50.2	44.1	5.7	2.4
8	Adapting to change in the workplace	44.5	47.6	7.9	2.4
13	Thinking critically	47.3	42.5	10.2	2.4
17	Figuring out better way to get things done	44.5	46.6	8.9	2.4
18	Flexibility to changes in job requirements	47.9	45.3	6.8	2.4
26	Taking initiative	51.6	40.7	7.7	2.4
27	Revising judgment (open-mindedness)	46.9	45.2	7.9	2.4
29	Loyalty to company or employer	46.7	42.3	11.0	2.4
45	Effectively communicating in writing	48.9	39.7	11.4	2.4
23	Following good health practices	43.3	43.8	12.9	2.3
32	Persistence	37.6	53.2	9.2	2.3
7	Doing job-related math computations	35.8	41.3	22.9	2.1
12	Being creative	32.4	45.9	21.7	2.1
39	Sensitivity to other cultures	34.5	43.0	22.5	2.1
6	Writing memos, letters, or reports	32.4	44.3	23.3	2.0
10	Using a computer	34.9	31.4	33.7	2.0
11	Knowledge & application of codes, laws, regs.	30.1	35.7	34.1	2.0
40	Under. basic scientific concepts & principles	28.8	41.0	30.2	2.0
25	Interpreting numerical tables & reports	23.9	38.4	37.7	1.9
30	Public speaking skills	21.1	40.0	38.8	1.8
31	Understand roles of social instit. & organ.	24.3	33.6	42.1	1.8
21	Knowledge, application of economic principles	14.1	37.8	48.1	1.7
41	Under. & participating in political processes	10.7	30.6	58.7	1.5
20	Speaking or writing foreign language(s)	6.5	18.3	75.1	1.3

Table D-2

Results for All Former Students: B. Importance for Career Advancement
(N=910)

	Knowledge, Skill, or Ability	3 Extremely Important	2 Impor- tant	1 Not Important	Mean
2	Performing tasks accurately	82.8	16.2	1.0	2.8
15	Dependability	83.0	15.7	1.4	2.8
46	Positive work attitude	79.1	19.5	1.5	2.8
1	Attendance and punctuality	74.5	22.8	2.7	2.7
5	Reading & comprehending job-related materials	72.7	25.0	2.4	2.7
14	Decision making skills	71.7	25.4	2.9	2.7
19	Ability to follow instructions	68.7	29.2	2.1	2.7
22	Getting along with others	68.0	29.7	2.2	2.7
24	Honesty and ethical behavior	74.1	22.6	3.3	2.7
36	Accepting responsibility for actions	70.3	26.2	3.5	2.7
38	Self-assurance/self-confidence	70.8	27.0	2.1	2.7
42	Ability to work independently	73.5	24.5	2.0	2.7
43	Working cooperatively as team member	69.5	26.5	4.1	2.7
44	Effectively communicating verbally	74.9	23.8	1.4	2.7
9	Ability to comm. effectively in small groups	63.2	30.9	5.9	2.6
26	Taking initiative	63.4	31.9	4.7	2.6
28	Listening attentively	65.5	32.0	2.5	2.6
33	Problem solving skills	64.9	31.9	3.3	2.6
34	Reasoning ability	63.7	34.1	2.3	2.6
35	Doing more than minimally required	68.7	26.5	4.8	2.6
37	Following rules and policies	65.9	31.5	2.6	2.6
45	Effectively communicating in writing	63.4	31.3	5.3	2.6
3	Accepting constructive criticism	54.5	41.9	3.6	2.5
4	Being assertive when necessary	57.9	38.3	3.9	2.5
8	Adapting to change in the workplace	52.8	40.9	6.3	2.5
13	Thinking critically	54.0	38.4	7.6	2.5
17	Figuring out better way to get things done	55.3	39.0	5.6	2.5
18	Flexibility to changes in job requirements	52.6	42.5	4.8	2.5
27	Revising judgment (open-mindedness)	55.3	39.9	4.8	2.5
29	Loyalty to company or employer	55.8	35.6	8.6	2.5
16	Appropriate dress and grooming	48.4	43.7	7.9	2.4
32	Persistence	48.2	44.7	7.0	2.4
6	Writing memos, letters, or reports	43.6	43.7	12.8	2.3
12	Being creative	42.5	44.1	13.4	2.3
23	Following good health practices	43.5	44.0	12.5	2.3
7	Doing job-related math computations	36.1	44.9	19.0	2.2
10	Using a computer	42.8	34.6	22.5	2.2
30	Public speaking skills	37.4	40.5	22.1	2.2
39	Sensitivity to other cultures	35.7	45.8	18.5	2.2
11	Knowledge & application of codes, laws, regs.	35.9	36.7	27.4	2.1
25	Interpreting numerical tables & reports	31.8	42.3	25.9	2.1
31	Understand roles of social instit. & organ.	29.0	37.0	34.0	2.0
40	Under. basic scientific concepts & principles	32.9	38.9	28.2	2.0
21	Knowledge, application of economic principles	22.8	41.8	35.3	1.9
41	Under. & participating in political processes	16.6	35.2	48.2	1.7
20	Speaking or writing foreign language(s)	10.1	24.1	65.8	1.4

Table D-3

Results for Former Degree Students: A. Importance for Current Job Performance (N=485)

	Knowledge, Skill, or Ability	3 Extremely Important	2 Impor- tant	1 Not Important	Mean
2	Performing tasks accurately	82.9	16.7	.4	2.8
15	Dependability	81.3	17.5	1.2	2.8
1	Attendance and punctuality	74.8	23.1	2.1	2.7
5	Reading & comprehending job-related materials	68.2	29.3	2.5	2.7
24	Honesty and ethical behavior	70.8	26.2	2.9	2.7
36	Accepting responsibility for actions	68.3	28.7	2.9	2.7
42	Ability to work independently	72.6	25.2	2.3	2.7
46	Positive work attitude	71.5	27.1	1.5	2.7
14	Decision making skills	61.5	32.4	6.0	2.6
19	Ability to follow instructions	66.3	31.4	2.3	2.6
22	Getting along with others	63.6	33.7	2.7	2.6
28	Listening attentively	62.2	34.9	2.9	2.6
33	Problem solving skills	61.2	34.4	4.4	2.6
34	Reasoning ability	60.4	36.9	2.7	2.6
37	Following rules and policies	62.2	34.1	3.7	2.6
38	Self-assurance/self-confidence	58.7	37.9	3.3	2.6
43	Working cooperatively as team member	66.7	28.1	5.2	2.6
44	Effectively communicating verbally	65.6	32.2	2.3	2.6
9	Ability to comm. effectively in small groups	52.6	39.9	7.5	2.5
3	Accepting constructive criticism	44.9	51.4	3.8	2.4
4	Being assertive when necessary	49.3	44.7	6.1	2.4
8	Adapting to change in the workplace	45.1	48.0	6.9	2.4
13	Thinking critically	47.9	44.4	7.7	2.4
18	Flexibility to changes in job requirements	49.2	43.3	7.5	2.4
26	Taking initiative	51.5	40.6	7.9	2.4
27	Revising judgment (open-mindedness)	47.7	44.6	7.7	2.4
29	Loyalty to company or employer	45.8	45.0	9.2	2.4
35	Doing more than minimally required	51.1	40.3	8.5	2.4
45	Effectively communicating in writing	49.1	39.7	11.3	2.4
17	Figuring out better way to get things done	42.6	48.6	8.8	2.3
23	Following good health practices	43.0	44.1	12.9	2.3
32	Persistence	37.5	54.6	7.9	2.3
7	Doing job-related math computations	37.8	41.5	20.7	2.2
16	Appropriate dress and grooming	35.2	50.4	14.4	2.2
6	Writing memos, letters, or reports	32.5	44.2	23.3	2.1
12	Being creative	31.0	46.2	22.9	2.1
39	Sensitivity to other cultures	34.9	43.4	21.7	2.1
10	Using a computer	35.6	33.1	31.3	2.0
11	Knowledge & application of codes, laws, regs.	28.3	38.7	33.1	2.0
40	Under. basic scientific concepts & principles	30.6	38.7	30.6	2.0
25	Interpreting numerical tables & reports	21.4	41.2	37.4	1.8
30	Public speaking skills	20.9	40.7	38.4	1.8
31	Understand roles of social instit. & organ.	24.0	33.4	42.6	1.8
21	Knowledge, application of economic principles	13.2	36.7	50.1	1.6
41	Under. & participating in political processes	11.5	30.1	58.5	1.5
20	Speaking or writing foreign language(s)	7.1	18.1	74.8	1.3

Table D-4

Results for Former Degree Students: B. Importance for Career Advancement
(N=485)

	Knowledge, Skill, or Ability	3 Extremely Important	2 Impor-tant	1 Not Important	Mean
2	Performing tasks accurately	83.1	16.7	.2	2.8
15	Dependability	84.1	14.8	1.0	2.8
46	Positive work attitude	78.3	20.4	1.2	2.8
1	Attendance and punctuality	75.7	22.2	2.1	2.7
5	Reading & comprehending job-related materials	73.0	25.2	1.9	2.7
14	Decision making skills	72.7	24.8	2.5	2.7
24	Honesty and ethical behavior	73.2	23.6	3.1	2.7
36	Accepting responsibility for actions	71.6	24.8	3.5	2.7
38	Self-assurance/self-confidence	70.5	27.2	2.3	2.7
42	Ability to work independently	73.3	25.0	1.7	2.7
44	Effectively communicating verbally	73.8	24.9	1.2	2.7
19	Ability to follow instructions	65.8	32.5	1.7	2.6
22	Getting along with others	66.5	31.3	2.3	2.6
26	Taking initiative	63.3	31.0	5.7	2.6
28	Listening attentively	64.0	33.7	2.3	2.6
33	Problem solving skills	65.2	32.1	2.7	2.6
34	Reasoning ability	64.3	33.4	2.3	2.6
35	Doing more than minimally required	66.4	29.0	4.6	2.6
37	Following rules and policies	66.5	30.4	3.1	2.6
43	Working cooperatively as team member	67.9	28.7	3.3	2.6
45	Effectively communicating in writing	63.2	32.4	4.4	2.6
3	Accepting constructive criticism	55.6	41.3	3.2	2.5
4	Being assertive when necessary	58.0	38.7	3.3	2.5
8	Adapting to change in the workplace	53.2	41.2	5.7	2.5
9	Ability to comm. effectively in small groups	60.3	33.9	5.9	2.5
13	Thinking critically	54.6	38.3	7.1	2.5
17	Figuring out better way to get things done	56.7	37.9	5.4	2.5
18	Flexibility to changes in job requirements	54.1	41.1	4.8	2.5
27	Revising judgment (open-mindedness)	56.7	38.1	5.2	2.5
29	Loyalty to company or employer	55.8	36.3	8.0	2.5
16	Appropriate dress and grooming	45.5	47.8	6.7	2.4
32	Persistence	49.9	43.2	6.9	2.4
6	Writing memos, letters, or reports	43.0	45.5	11.5	2.3
12	Being creative	42.4	43.2	14.4	2.3
23	Following good health practices	42.3	45.2	12.6	2.3
7	Doing job-related math computations	37.1	45.2	17.7	2.2
10	Using a computer	42.6	36.6	20.8	2.2
30	Public speaking skills	38.2	42.2	19.6	2.2
39	Sensitivity to other cultures	37.0	43.9	19.0	2.2
11	Knowledge & application of codes, laws, regs.	33.4	39.2	27.3	2.1
40	Under. basic scientific concepts & principles	33.8	39.2	26.9	2.1
25	Interpreting numerical tables & reports	28.6	47.0	24.4	2.0
31	Understand roles of social instit. & organ.	29.5	37.4	33.1	2.0
21	Knowledge, application of economic principles	22.1	40.5	37.4	1.8
41	Under. & participating in political processes	17.7	35.9	46.3	1.7
20	Speaking or writing foreign language(s)	10.1	25.6	64.3	1.5

Table D-5

Results for Former Certificate Students: A. Importance for Current Job
(N=425)

	Knowledge, Skill, or Ability	3 Extremely Important	2 Impor- tant	1 Not Important	Mean
2	Performing tasks accurately	80.4	17.9	1.7	2.8
15	Dependability	79.7	18.1	2.1	2.8
1	Attendance and punctuality	72.8	24.8	2.4	2.7
19	Ability to follow instructions	71.9	26.0	2.1	2.7
24	Honesty and ethical behavior	70.8	25.9	3.3	2.7
42	Ability to work independently	71.4	24.8	3.9	2.7
43	Working cooperatively as team member	70.9	24.8	4.4	2.7
46	Positive work attitude	72.6	24.2	3.1	2.7
5	Reading & comprehending job-related materials	66.4	30.2	3.3	2.6
22	Getting along with others	65.6	32.3	2.1	2.6
28	Listening attentively	61.4	33.6	5.0	2.6
36	Accepting responsibility for actions	66.2	29.0	4.9	2.6
37	Following rules and policies	64.5	33.1	2.4	2.6
38	Self-assurance/self-confidence	59.7	36.2	4.1	2.6
44	Effectively communicating verbally	66.5	30.3	3.2	2.6
4	Being assertive when necessary	51.2	43.5	5.3	2.5
9	Ability to comm. effectively in small groups	57.2	35.6	7.1	2.5
14	Decision making skills	58.9	34.4	6.7	2.5
33	Problem solving skills	55.6	36.9	7.5	2.5
34	Reasoning ability	53.8	41.3	4.9	2.5
35	Doing more than minimally required	57.9	35.1	7.0	2.5
3	Accepting constructive criticism	43.4	50.6	6.0	2.4
17	Figuring out better way to get things done	46.7	44.3	9.0	2.4
18	Flexibility to changes in job requirements	46.4	47.6	6.0	2.4
26	Taking initiative	51.8	40.9	7.4	2.4
27	Revising judgment (open-mindedness)	46.1	45.8	8.1	2.4
45	Effectively communicating in writing	48.7	39.7	11.6	2.4
8	Adapting to change in the workplace	43.8	47.1	9.1	2.3
13	Thinking critically	46.6	40.3	13.0	2.3
16	Appropriate dress and grooming	41.5	46.4	12.1	2.3
23	Following good health practices	43.6	43.6	12.9	2.3
29	Loyalty to company or employer	47.7	39.2	13.1	2.3
32	Persistence	37.7	51.6	10.8	2.3
6	Writing memos, letters, or reports	32.2	44.5	23.2	2.1
7	Doing job-related math computations	33.6	41.0	25.4	2.1
12	Being creative	34.1	45.6	20.4	2.1
39	Sensitivity to other cultures	34.1	42.4	23.4	2.1
10	Using a computer	34.0	29.5	36.6	2.0
11	Knowledge & application of codes, laws, regs.	32.3	32.3	35.4	2.0
40	Under. basic scientific concepts & principles	26.7	43.6	29.7	2.0
25	Interpreting numerical tables & reports	26.7	35.2	38.1	1.9
30	Public speaking skills	21.4	39.3	39.3	1.8
31	Understand roles of social instit. & organ.	24.6	33.7	41.6	1.8
21	Knowledge, application of economic principles	15.1	39.1	45.8	1.7
41	Under. & participating in political processes	9.8	31.2	59.0	1.5
20	Speaking or writing foreign language(s)	5.9	18.5	75.5	1.3

Table D-6

Results for Former Certificate Students: B. Importance for Career Advancement (N=425)

	Knowledge, Skill, or Ability	3 Extremely Important	2 Impor- tant	1 Not Important	Mean
2	Performing tasks accurately	82.5	15.5	1.9	2.8
15	Dependability	81.6	16.7	1.7	2.8
46	Positive work attitude	80.0	18.3	1.7	2.8
1	Attendance and punctuality	73.1	23.5	3.4	2.7
5	Reading & comprehending job-related materials	72.3	24.8	2.9	2.7
14	Decision making skills	70.6	26.0	3.4	2.7
19	Ability to follow instructions	72.1	25.2	2.7	2.7
22	Getting along with others	69.8	28.0	2.2	2.7
24	Honesty and ethical behavior	75.1	21.5	3.4	2.7
35	Doing more than minimally required	71.5	23.6	5.0	2.7
36	Accepting responsibility for actions	68.7	27.8	3.5	2.7
38	Self-assurance/self-confidence	71.3	26.8	2.0	2.7
42	Ability to work independently	73.6	23.9	2.5	2.7
43	Working cooperatively as team member	71.3	23.8	5.0	2.7
44	Effectively communicating verbally	76.2	22.3	1.5	2.7
9	Ability to comm. effectively in small groups	66.6	27.4	6.1	2.6
26	Taking initiative	63.4	32.9	3.7	2.6
28	Listening attentively	67.3	30.0	2.7	2.6
33	Problem solving skills	64.4	31.6	4.0	2.6
34	Reasoning ability	62.9	34.8	2.2	2.6
37	Following rules and policies	65.2	32.8	2.0	2.6
45	Effectively communicating in writing	63.5	30.0	6.4	2.6
3	Accepting constructive criticism	53.2	42.7	4.1	2.5
4	Being assertive when necessary	57.7	37.8	4.4	2.5
8	Adapting to change in the workplace	52.4	40.5	7.1	2.5
13	Thinking critically	53.3	38.6	8.1	2.5
17	Figuring out better way to get things done	53.8	40.4	5.8	2.5
18	Flexibility to changes in job requirements	51.0	44.1	4.9	2.5
27	Revising judgment (open-mindedness)	53.6	42.0	4.4	2.5
29	Loyalty to company or employer	55.9	34.9	9.3	2.5
16	Appropriate dress and grooming	51.8	38.9	9.2	2.4
32	Persistence	46.3	46.5	7.2	2.4
6	Writing memos, letters, or reports	44.2	41.5	14.3	2.3
12	Being creative	42.7	45.1	12.2	2.3
23	Following good health practices	44.9	42.7	12.4	2.3
10	Using a computer	43.1	32.4	24.6	2.2
39	Sensitivity to other cultures	34.2	48.0	17.8	2.2
7	Doing job-related math computations	34.9	44.6	20.5	2.1
11	Knowledge & application of codes, laws, regs.	38.8	33.7	27.4	2.1
25	Interpreting numerical tables & reports	35.6	36.8	27.6	2.1
30	Public speaking skills	36.4	38.6	25.0	2.1
40	Under. basic scientific concepts & principles	31.8	38.5	29.8	2.0
21	Knowledge, application of economic principles	23.7	43.4	32.9	1.9
31	Understand roles of social instit. & organ.	28.4	36.5	35.0	1.9
41	Under. & participating in political processes	15.3	34.3	50.4	1.6
20	Speaking or writing foreign language(s)	10.2	22.3	67.5	1.4

APPENDIX E

RESULTS FOR ALL EMPLOYERS

Table E-1: Results for All Employers: A. Importance for Employee's Current Job

Table E-2: Results for All Employers: B. Importance for Employee's Career Advancement

Table E-1

Results for All Employers: A. Importance for Employee's Current Job Performance (N=214)

	Knowledge, Skill, or Ability	3 Extremely Important	2 Impor- tant	1 Not Important	Mean
15	Dependability	85.9	13.6	.5	2.9
1	Attendance and punctuality	84.1	14.1	1.4	2.8
2	Performing tasks accurately	81.8	17.8	.5	2.8
24	Honesty and ethical behavior	80.8	18.7	.5	2.8
19	Ability to follow instructions	71.8	27.2	.9	2.7
43	Working cooperatively as team member	66.4	32.2	1.4	2.7
46	Positive work attitude	70.9	28.2	.9	2.7
5	Reading & comprehending job-related materials	60.1	38.5	1.4	2.6
22	Getting along with others	60.3	38.8	.9	2.6
36	Accepting responsibility for actions	59.9	37.7	2.4	2.6
37	Following rules and policies	59.6	39.0	1.4	2.6
28	Listening attentively	49.5	49.1	1.4	2.5
44	Effectively communicating verbally	47.7	50.5	1.9	2.5
3	Accepting constructive criticism	39.8	58.3	1.9	2.4
8	Adapting to change in the workplace	44.9	50.5	4.7	2.4
18	Flexibility to changes in job requirements	43.9	52.3	3.7	2.4
29	Loyalty to company or employer	44.5	47.9	7.6	2.4
33	Problem solving skills	40.3	55.5	4.3	2.4
34	Reasoning ability	38.7	59.0	2.4	2.4
42	Ability to work independently	46.3	50.0	3.7	2.4
9	Ability to comm. effectively in small groups	35.0	55.1	9.8	2.3
14	Decision making skills	37.4	57.8	4.7	2.3
23	Following good health practices	40.7	51.4	7.9	2.3
26	Taking initiative	35.5	60.7	3.7	2.3
27	Revising judgment (open-mindedness)	34.8	61.9	3.3	2.3
35	Doing more than minimally required	36.0	59.8	4.2	2.3
38	Self-assurance/self-confidence	32.4	63.4	4.2	2.3
4	Being assertive when necessary	27.6	65.4	7.0	2.2
13	Thinking critically	28.6	62.9	8.6	2.2
16	Appropriate dress and grooming	30.0	57.7	12.2	2.2
17	Figuring out better way to get things done	26.2	68.7	5.1	2.2
39	Sensitivity to other cultures	31.9	53.5	14.6	2.2
45	Effectively communicating in writing	33.6	56.5	9.8	2.2
7	Doing job-related math computations	30.0	51.2	18.8	2.1
12	Being creative	22.5	61.0	16.4	2.1
32	Persistence	20.4	71.6	8.1	2.1
6	Writing memos, letters, or reports	15.9	60.3	23.8	1.9
10	Using a computer	24.4	43.7	31.9	1.9
11	Knowledge & application of codes, laws, regs.	19.3	45.3	35.4	1.8
40	Under. basic scientific concepts & principles	12.8	50.7	36.5	1.8
25	Interpreting numerical tables & reports	11.3	50.2	38.5	1.7
30	Public speaking skills	8.5	46.0	45.5	1.6
31	Understand roles of social instit. & organ.	9.9	36.8	53.3	1.6
21	Knowledge, application of economic principles	1.4	37.7	60.8	1.4
41	Under. & participating in political processes	5.2	29.1	65.7	1.4
20	Speaking or writing foreign language(s)	2.3	14.5	83.2	1.2

Table E-2

Results for All Employers: B. Importance for Employee's Career Advancement
(N=214)

	Knowledge, Skill, or Ability	3 Extremely Important	2 Impor-tant	1 Not Important	Mean
15	Dependability	92.0	7.5	.5	2.9
1	Attendance and punctuality	81.6	17.0	1.4	2.8
2	Performing tasks accurately	84.4	15.1	.5	2.8
24	Honesty and ethical behavior	82.2	16.9	.9	2.8
46	Positive work attitude	81.5	18.0	.5	2.8
5	Reading & comprehending job-related materials	68.4	30.2	1.4	2.7
14	Decision making skills	68.9	30.1	1.0	2.7
19	Ability to follow instructions	73.1	25.5	1.4	2.7
22	Getting along with others	72.3	26.3	1.4	2.7
35	Doing more than minimally required	68.1	31.0	.9	2.7
36	Accepting responsibility for actions	75.8	23.2	.9	2.7
43	Working cooperatively as team member	76.1	22.5	1.4	2.7
44	Effectively communicating verbally	71.4	28.2	.5	2.7
3	Accepting constructive criticism	59.8	39.2	1.0	2.6
8	Adapting to change in the workplace	62.4	34.7	2.8	2.6
18	Flexibility to changes in job requirements	62.9	35.2	1.9	2.6
26	Taking initiative	63.8	34.7	1.4	2.6
27	Revising judgment (open-mindedness)	60.8	37.8	1.4	2.6
28	Listening attentively	62.2	36.4	1.4	2.6
29	Loyalty to company or employer	60.0	35.2	4.8	2.6
33	Problem solving skills	61.0	37.6	1.4	2.6
34	Reasoning ability	59.2	39.3	1.4	2.6
37	Following rules and policies	66.5	31.6	1.9	2.6
38	Self-assurance/self-confidence	58.0	41.0	.9	2.6
42	Ability to work independently	64.3	32.9	2.8	2.6
45	Effectively communicating in writing	61.0	34.7	4.2	2.6
9	Ability to comm. effectively in small groups	54.9	41.8	3.3	2.5
13	Thinking critically	57.4	38.3	4.3	2.5
17	Figuring out better way to get things done	56.3	41.8	1.9	2.5
4	Being assertive when necessary	44.8	52.8	2.4	2.4
12	Being creative	46.7	44.3	9.0	2.4
16	Appropriate dress and grooming	47.9	48.8	3.3	2.4
23	Following good health practices	41.8	52.1	6.1	2.4
6	Writing memos, letters, or reports	40.5	50.0	9.5	2.3
32	Persistence	38.6	57.6	3.8	2.3
39	Sensitivity to other cultures	40.8	51.2	8.1	2.3
7	Doing job-related math computations	30.7	57.5	11.8	2.2
10	Using a computer	28.8	49.1	22.2	2.1
11	Knowledge & application of codes, laws, regs.	27.0	53.1	19.9	2.1
25	Interpreting numerical tables & reports	25.9	53.8	20.3	2.1
30	Public speaking skills	31.0	49.0	20.0	2.1
40	Under. basic scientific concepts & principles	18.6	52.4	29.0	1.9
21	Knowledge, application of economic principles	12.8	56.4	30.8	1.8
31	Understand roles of social instit. & organ.	18.1	46.2	35.7	1.8
41	Under. & participating in political processes	15.1	35.4	49.5	1.7
20	Speaking or writing foreign language(s)	4.7	25.8	69.5	1.4